

## **DETAILED ACTION**

### ***Response to Amendment***

1. Claims 1 and 3 are currently pending. Claim 2 was previously cancelled. Claim 3 has been withdrawn from further consideration as being drawn to a non-elected invention. The amended claim does overcome the previously stated 102 and 103 rejections. However, upon further consideration, claim 1 is rejected under the following new 112 and 103 rejections. This action is made **FINAL** as necessitated by the amendment.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation "contact surfaces of the separator plate being directly contacted across an entire width of the separator plates" is not supported by the specification. The drawings show that the contact surfaces of the side edges of the

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separator plate are not in contact with each other. Therefore, the contact surfaces of the entire width of the separator plates are not in contact with each other.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okazaki (US 2001/0018143) in view of Bernacki (US 2004/0038109).

The Okazaki reference discloses a fuel cell comprising: a pair of separators "1A" & "1C" that are arranged in parallel and facing each other with opposed contact surfaces, wherein grooves "8" provided on the separators define a gap forming a gasket groove between the contact surfaces located at a peripheral edge on the opposite side edges of the separator plates, and wherein the contact surfaces of the separator plates being directly contacted across an entire width of the separator plates and between the gasket groove on the opposite side edges; and a gasket "7a" located in the gasket groove, wherein the gasket is made of rubber elastic material (See paragraph [0046] and Figure 1).

However, Okazaki does not expressly teach a gasket being glued to each of the separator plates, wherein opposite surfaces of the gasket is adhered to the separator plates through adhesives, and wherein the gasket is compressed in the gasket groove

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so that a height  $h$  of the gasket is equal to the groove gap  $d_2$ , thereby forming a gasket having a low reaction force in the gasket groove. The Bernacki reference discloses a gasket "18" that has an initial height greater than the groove gap between the two separator plates "10", wherein the gasket is bonded to the separator plates by using an adhesive, and wherein the gasket is compressed in the gasket groove so that the height of the gasket is equal to the groove gap (See Figure 2). Examiner's note: It is inherent that when the gasket is compressed in the gasket groove, the gasket would have a low reaction force in the gasket groove.

Therefore, it would have been obvious to one of ordinary skill in the art to replace the Okazaki gasket with a gasket that is glued to each of the separator plates, wherein opposite surfaces of the gasket is adhered to the separator plates through adhesives, and wherein the gasket is compressed in the gasket groove so that a height of the gasket is equal to the groove gap, thereby forming a gasket having a low reaction force in the gasket groove because one of ordinary skill in the art would have been able to carry out such a substitution and the results would have been reasonably predictable.

However, Okazaki as modified by Bernacki does not expressly teach a gasket with an initial height  $h$  of the gasket that is 105% to 130% of a groove gap  $d_2$  of the gasket groove. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Okazaki/Bernacki gasket to include a gasket with an initial height  $h$  of the gasket that is 105% to 130% of a groove gap  $d_2$  of the gasket groove because it has been held that the discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. *In re*

*Boesch*, 205 USPQ 215 (CCPA 1980). The initial height of the gasket and the height of the groove gap are results effective variables of varying the compressive force applied by the gasket onto the separator plates in order to effectively form a seal between the separator plates.

6. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okazaki (US 2001/0018143) in view of Bernacki (US 2004/0038109), and further in view of Wald et al (US 2003/0212378).

The Okazaki reference discloses a fuel cell comprising: a pair of separators "1A" & "1C" that are arranged in parallel and facing each other with opposed contact surfaces, wherein grooves "8" provided on the separators define a gap forming a gasket groove between the contact surfaces located at a peripheral edge on the opposite side edges of the separator plates, and wherein the contact surfaces of the separator plates being directly contacted across an entire width of the separator plates and between the gasket groove on the opposite side edges; and a gasket "7a" located in the gasket groove, wherein the gasket is made of rubber elastic material (See paragraph [0046] and Figure 1).

However, Okazaki does not expressly teach a gasket being glued to each of the separator plates, wherein opposite surfaces of the gasket is adhered to the separator plates through adhesives, and wherein the gasket is compressed in the gasket groove so that a height  $h$  of the gasket is equal to the groove gap  $d_2$ , thereby forming a gasket having a low reaction force in the gasket groove. The Bernacki reference discloses a gasket "18" that has an initial height greater than the groove gap between the two

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separator plates "10", wherein the gasket is bonded to the separator plates by using an adhesive, and wherein the gasket is compressed in the gasket groove so that the height of the gasket is equal to the groove gap (See Figure 2). Examiner's note: It is inherent that when the gasket is compressed in the gasket groove, the gasket would have a low reaction force in the gasket groove.

Therefore, it would have been obvious to one of ordinary skill in the art to replace the Okazaki gasket with a gasket that is glued to each of the separator plates, wherein opposite surfaces of the gasket is adhered to the separator plates through adhesives, and wherein the gasket is compressed in the gasket groove so that a height of the gasket is equal to the groove gap, thereby forming a gasket having a low reaction force in the gasket groove because one of ordinary skill in the art would have been able to carry out such a substitution and the results would have been reasonably predictable.

However, Okazaki as modified by Bernacki does not expressly teach a gasket with an initial height  $h$  of the gasket that is 105% to 130% of a groove gap  $d_2$  of the gasket groove. The Wald reference discloses a gasket material for a fuel cell membrane assembly that is compressed at between 5% and 25% which represents a gasket material that has an initial height of 105% to 133% of the compressed height which is the height of the groove gap  $d_2$  (See paragraph [0054]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Okazaki/Bernacki fuel cell to include a gasket that has an initial height  $h$  set to be 105% to 130% of a groove gap  $d_2$  of the gasket

groove in order to effectively seal the gases within the separator plates (See paragraph [0054]).

### ***Response to Arguments***

7. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Chuo whose telephone number is (571)272-0717.

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The examiner can normally be reached on M-F, 7:00AM to 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC

/Jonathan Crepeau/  
Primary Examiner, Art Unit 1795